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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/668,971      | 09/25/2000  | Mitihiko Takase      | 10873.574US01       | 3140             |

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EXAMINER

GONZALEZ, JULIO C

ART UNIT PAPER NUMBER

2834

DATE MAILED: 04/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/668,971

Applicant(s)

TAKASE ET AL.

Examiner

Julio C. Gonzalez

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 30 July 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

- ✓ 1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- ✓ 2. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

What is the substance in claim referring to? Is the substance the transducer? The piezoelectric substrate? Is the substance the doping region?

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-3, 5, 6 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Higaki et al.

Higaki discloses a surface acoustic wave device comprising a piezoelectric substrate 4, a first and second transducer 5 opposed to each other, the substrate including a doping region (see abstract) with a thickness of 50nm (column 10, lines 58,59) and an insulating layer 6 on top of the electrodes (see figure 10).

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Moreover, there is a plurality of conductive regions 11 between the first and second transducer and current flows between the first and second transducer via conductive regions (see figure 1).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higaki et al in view of Ohkubo et al.

Higaki discloses a surface acoustic wave device comprising a piezoelectric substrate 4, a first and second transducer 5 opposed to each other, the substrate including a doping region (see abstract) with a thickness of 50nm (column 10, lines 58,59) and an insulating layer 6 on top of the electrodes (see figure 10). Moreover, there is a plurality of conductive regions 11 between the first and second transducer and current flows between the first and second transducer via conductive regions (see figure 1).

However, Higaki et al does not disclose the insulating layer made of metal nitride.

On the other hand, Ohkubo et al discloses for the purpose of processing signals at high frequencies without increasing propagation losses that the insulating layers can be made of metal oxide or metal nitride (column 17, lines 38-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to design a wave device as disclosed by Higaki et al and to modify the invention by using nitride in an insulating layer for the purpose of processing signals at high frequencies without increasing propagation losses as disclosed by Ohkubo et al.

7. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higaki et al in view of ordinary skill in the art.

Higaki discloses a surface acoustic wave device comprising a piezoelectric substrate 4, a first and second transducer 5 opposed to each other, the substrate including a doping region (see abstract) with a thickness of 50nm (column 10, lines 58,59) and an insulating layer 6 on top of the electrodes (see figure 10). Moreover, there is a plurality of conductive regions 11 between the first and second transducer and current flows between the first and second transducer via conductive regions (see figure 1).

Higaki et al disclose the claimed invention except for ranges of the resistance of the doping region and the insulating layer.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to come with those optimum ranges that the applicant discloses, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In *re Aller*, 105 USPQ 233.

***Response to Arguments***

8. Applicant's arguments filed 2/11/02 have been fully considered but they are not persuasive.

According the Merriam-Webster's Collegiate Dictionary, doping means to affect with dope that is, a pasty preparation or a preparation for giving a desired quality to a substance or surface. From claim 1, the doped region is made of atoms or molecules. Higaki et al discloses a piezoelectric layer having a doped region (a prepared region) made of atoms since the piezoelectric layer is made up of zinc oxide (ZnO) (see abstract). Anyone with ordinary skill in the art would know that zinc oxide is composed of a molecule and atoms. Moreover, the piezoelectric layer has other prepared regions made up of atoms like Al, SiO<sub>2</sub> (column 10, lines 44-88 & column 11, lines 1-4). With regards to claim 22, the claim discloses a piezoelectric device having a plurality of conductive regions spaced apart and a tunnel current flows between the conductive regions. From the application's specifications, it seems like if the tunnel is a current path between the electrodes. Higaki et al teaches a basic structure of a surface acoustic device (column 3, lines 55, 56) that a first IDT 43 receives an electrical signal and that the electrical signal is sent to the other IDT 43' (column 1, lines 23-32). Anyone with ordinary skill in the art would know that an electrical signal is made up of a certain voltage and current level (Ohm's Law), thus a current path (tunnel) is formed between the IDT's.

***Conclusion***


Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio C. Gonzalez whose telephone number is (703) 305-1563. The examiner can normally be reached on M-F (8AM-5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



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Jcg

April 24, 2002